Nease Chemical Site
Proposed Cleanup Plan
Sediment and Floodplain Soil

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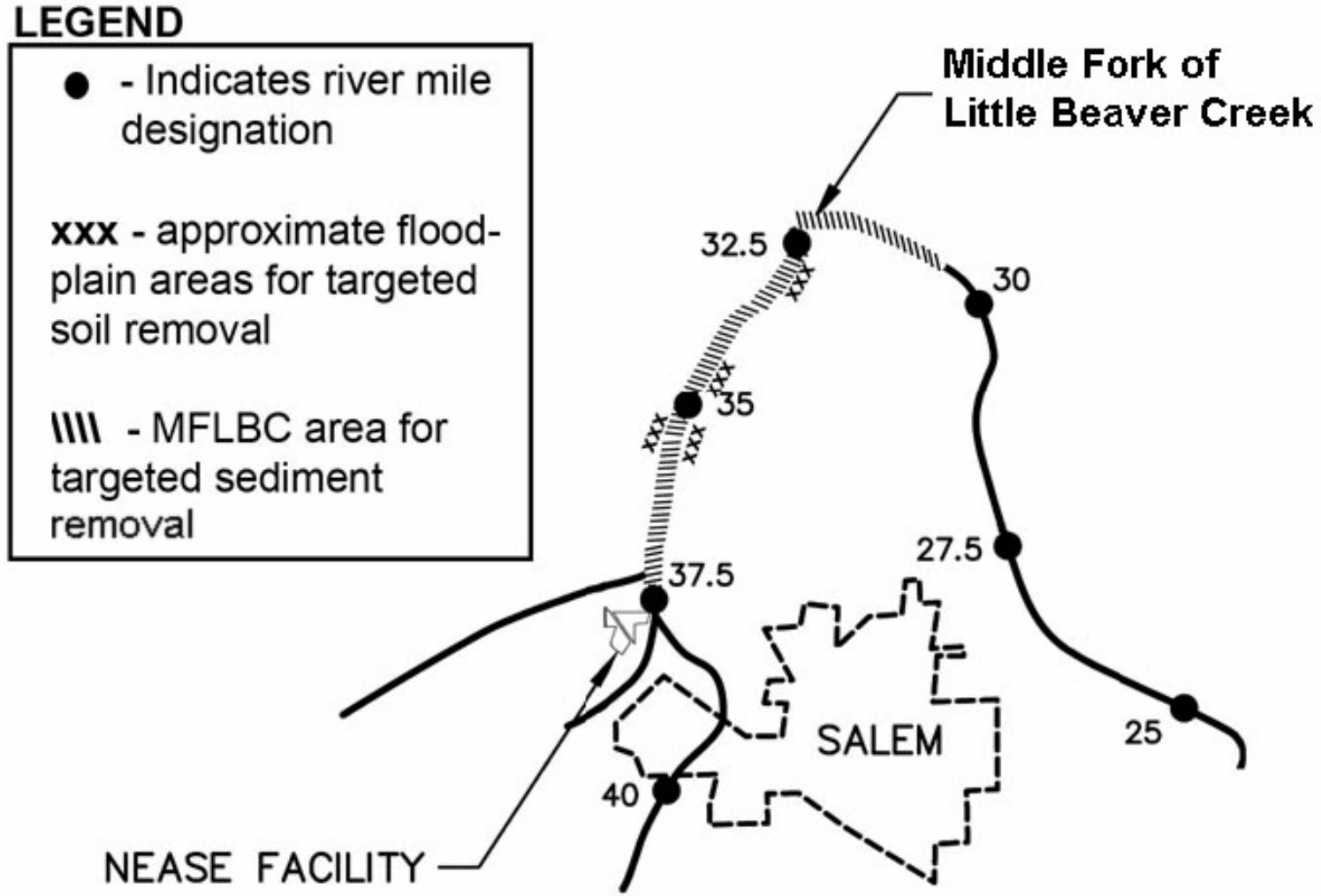
EPA's Proposed Cleanup Plan

- Addresses three components:
  - Feeder Creek sediment
  - Middle Fork of Little Beaver Creek (MFLBC) floodplain soil
  - MFLBC sediment
- Disposal of soil and sediment at the plant site under a clean soil cover
- Monitoring →before, during and after

Alternative C
EPA's Recommended Alternative

- Feeder Creek – remove all sediment
  - By dry excavation
- Floodplain soil – targeted removal
  - By excavation
  - To meet cleanup goal
- MFLBC sediment – targeted removal
  - By dredging or dry excavation
  - To meet cleanup goal
- Cost – $3.8 million

Targeted Remediation Areas



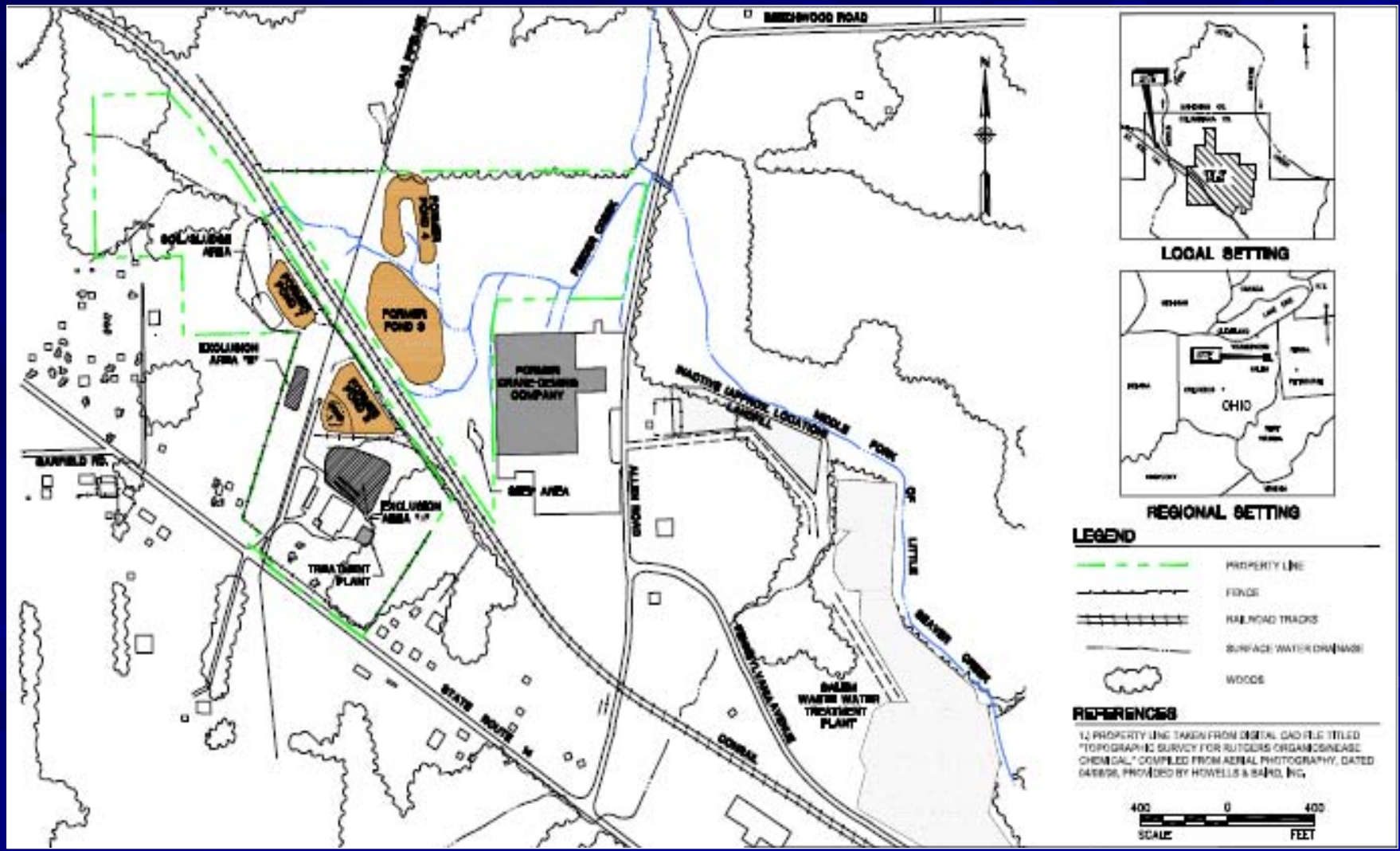
Alternative A

- EPA Is required to consider a “no action” or “no further action” option
- Feeder Creek – no further action, but existing sediment traps would remain
- Floodplain soil – no action
- MFLBC sediment – no action
- Cost – $360,000

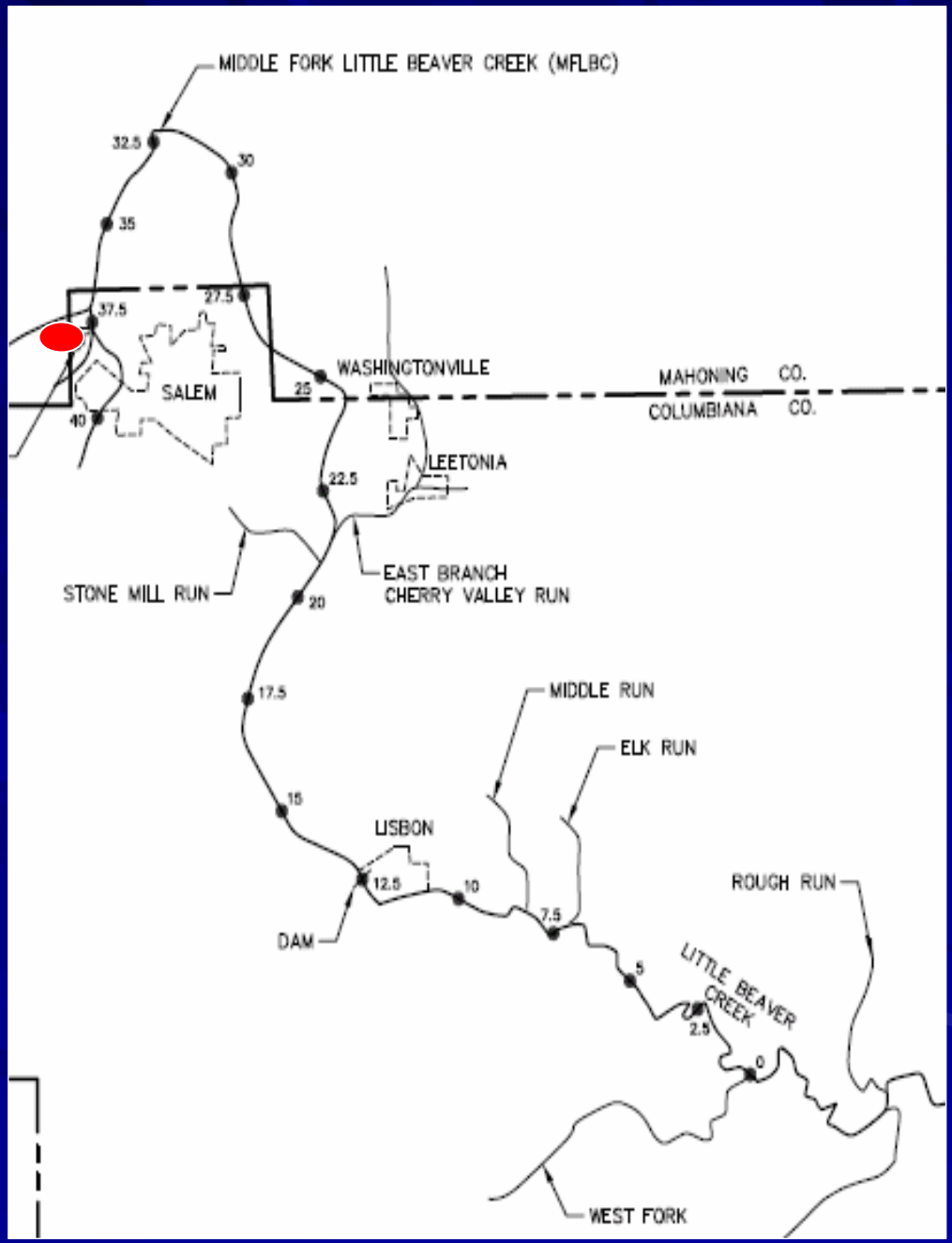
Alternative B

- Feeder Creek – remove all sediment
  - By dry excavation
- Floodplain soil – targeted removal
  - By excavation
  - To meet cleanup goal
- MFLBC sediment – monitored natural recovery
- Cost – $2.2 million

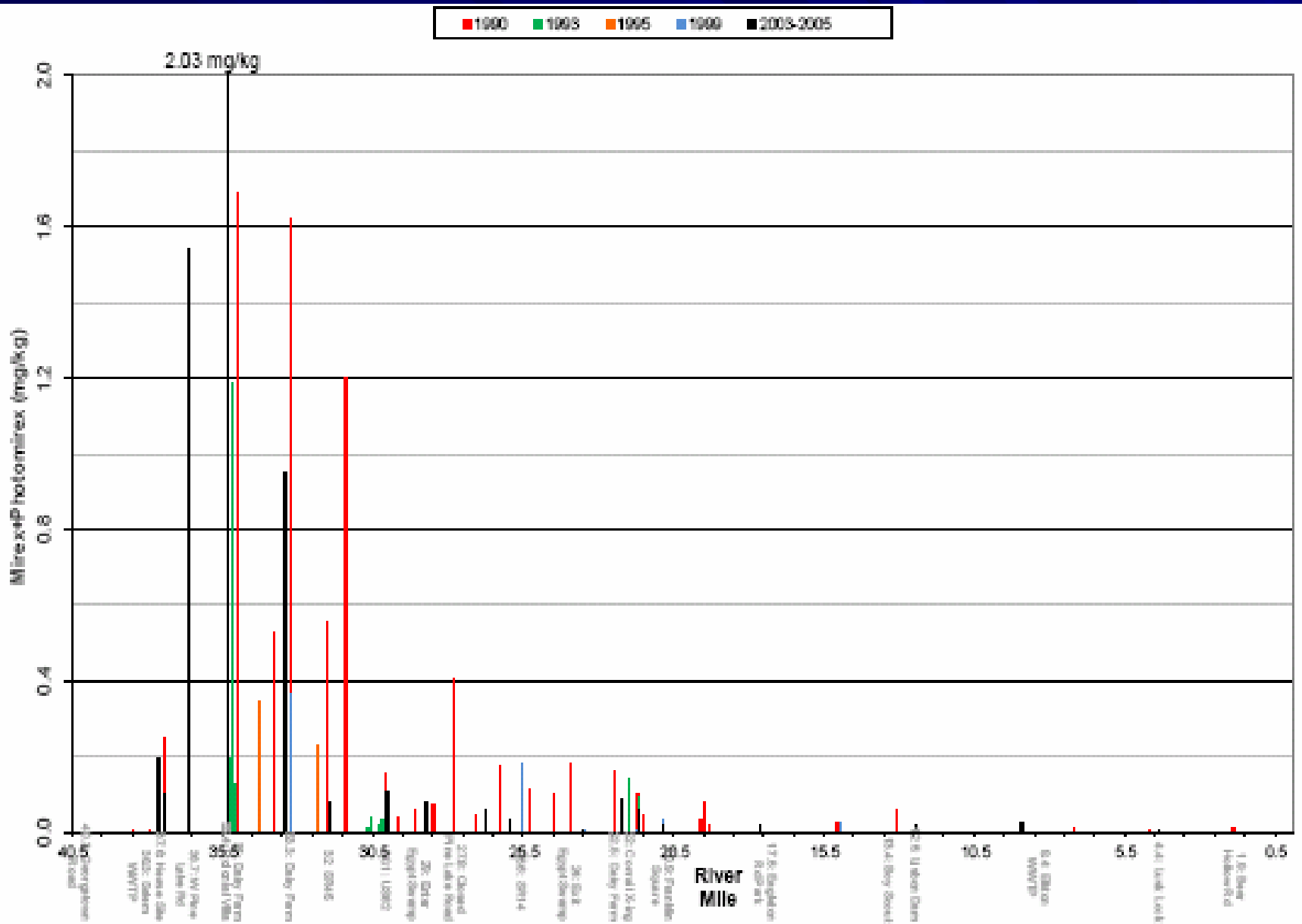
Nease Chemical Plant



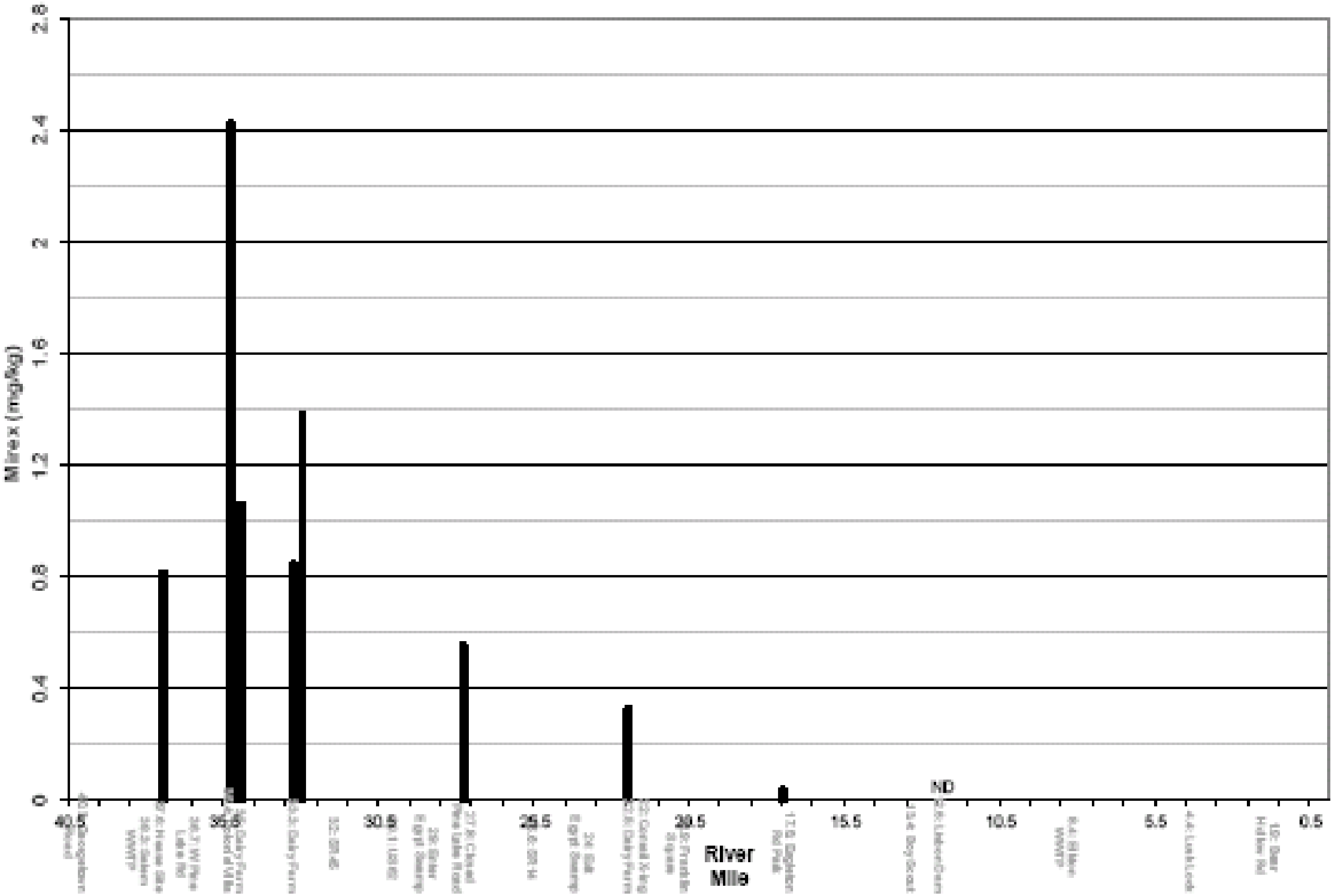
- Nease facility is west of MFLBC
- Feeder Creek drains the plant
- Mirex was carried into MFLBC
  - About 40 river miles investigated
  - Sediment, fish and soil tested
  - Highest levels are within 6 ½ miles of the plant



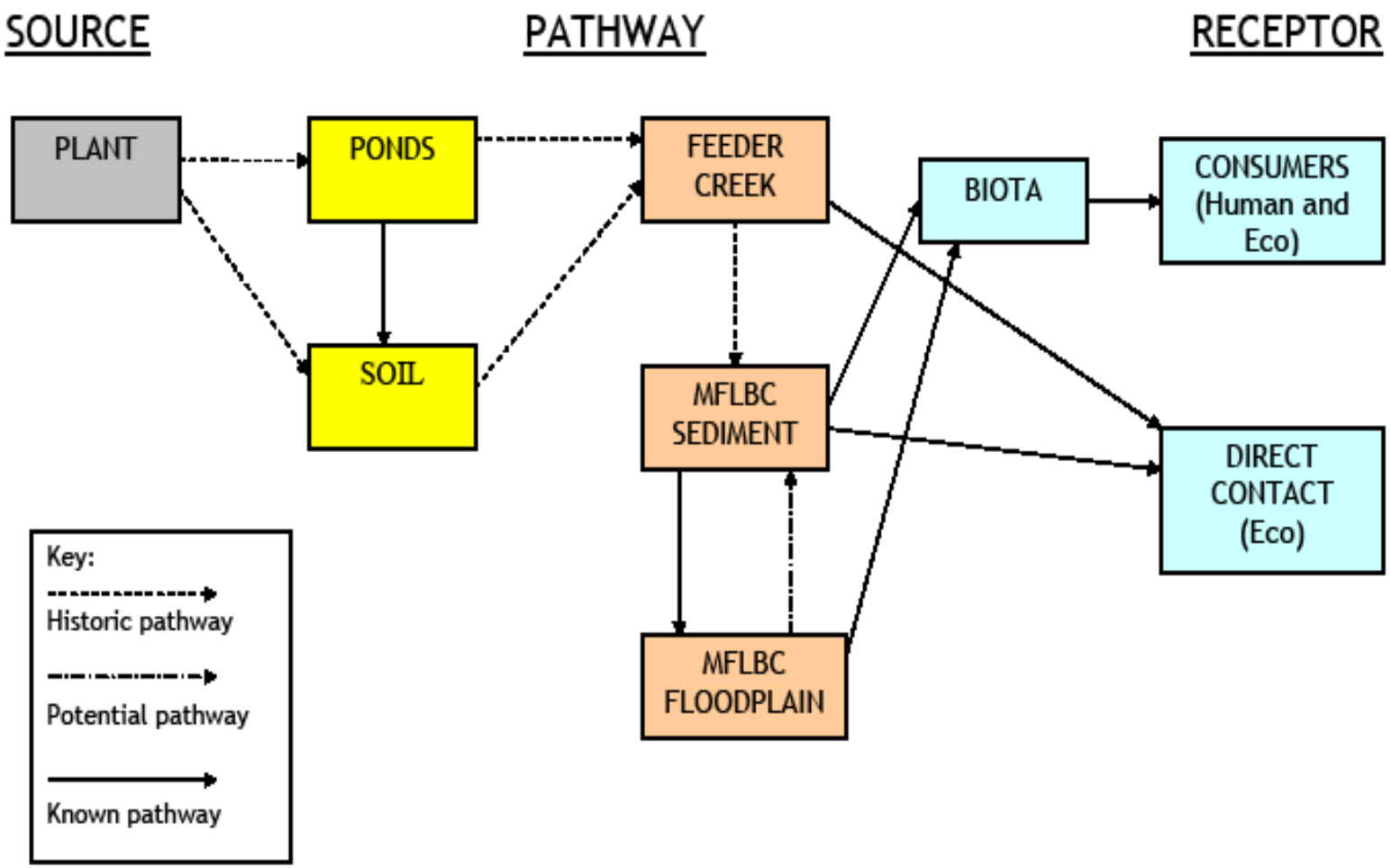
Sediment Results - MFLBC



Floodplain Soil Results – MFLBC, 2006



How Contamination Moved



Potential Risks

- Mirex is the main contaminant
  - It was banned in the U.S. in 1978
  - It breaks down very slowly and can build up in the food chain
  - It can cause adverse human health or ecological effects
- Currently people are not at risk
- In the future, people could be at risk from eating contaminated fish, milk or beef
- Small animals could be at risk

Removal Methods: Dry Excavation

Removal Methods: Dredging

Floodplain Soil Excavation

Soil and Sediment Handling

How Does EPA Compare Options? EPA's Nine Criteria

1. Overall protection of human health and the environment
2. Compliance with ARARs
3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility or volume through treatment
5. Short-term effectiveness
6. Implementability
7. Cost
8. State acceptance
9. Community acceptance

Why Alternative C?

- Offers best long-term cleanup solution
- Provides best protection for people and the environment
- Removes highly contaminated soil and sediment from MFLBC
- Removes Feeder Creek as a source
- Balances removal and habitat protection
- Meets cleanup goals most quickly

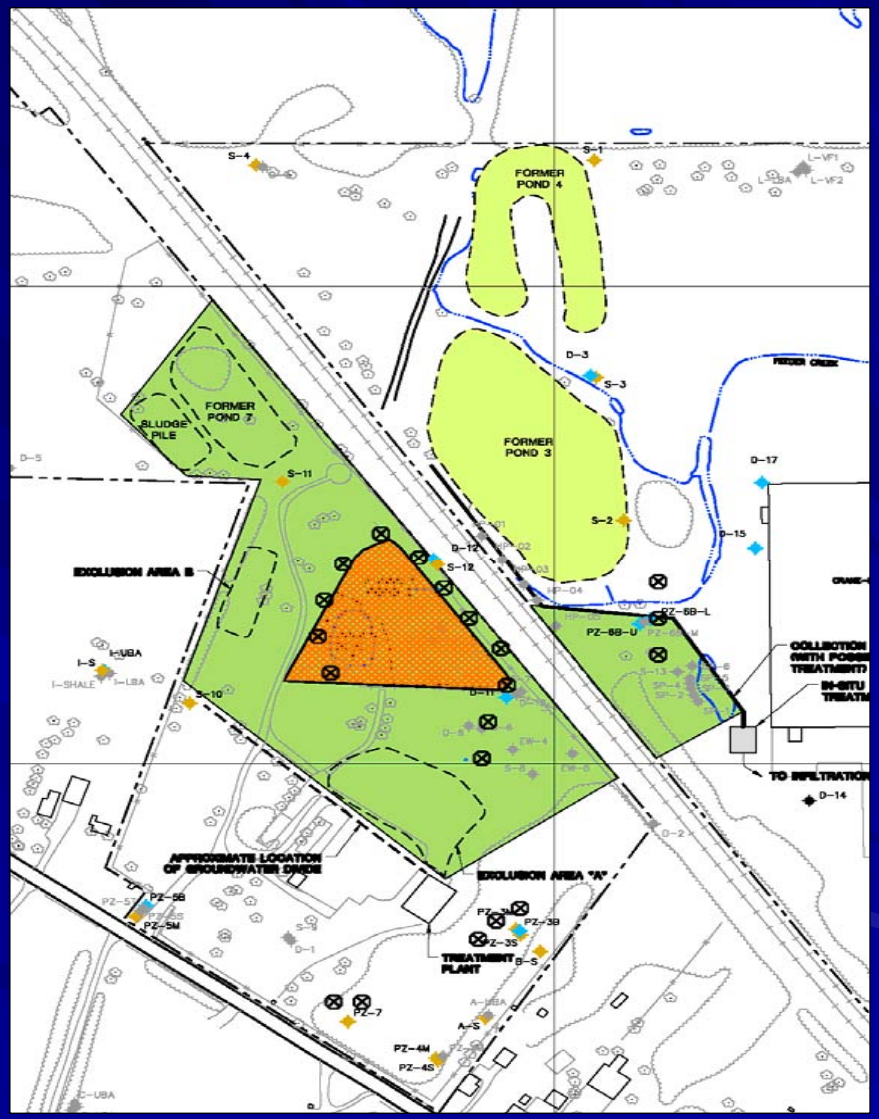
Next Steps

- EPA selects the final cleanup in a Record of Decision
  - Will consider all comments
- Sign legal agreement to do cleanup
- Pre-design investigations
- Design of the cleanup
- Construction of the remedy

Plant Soil and Groundwater Cleanup Update

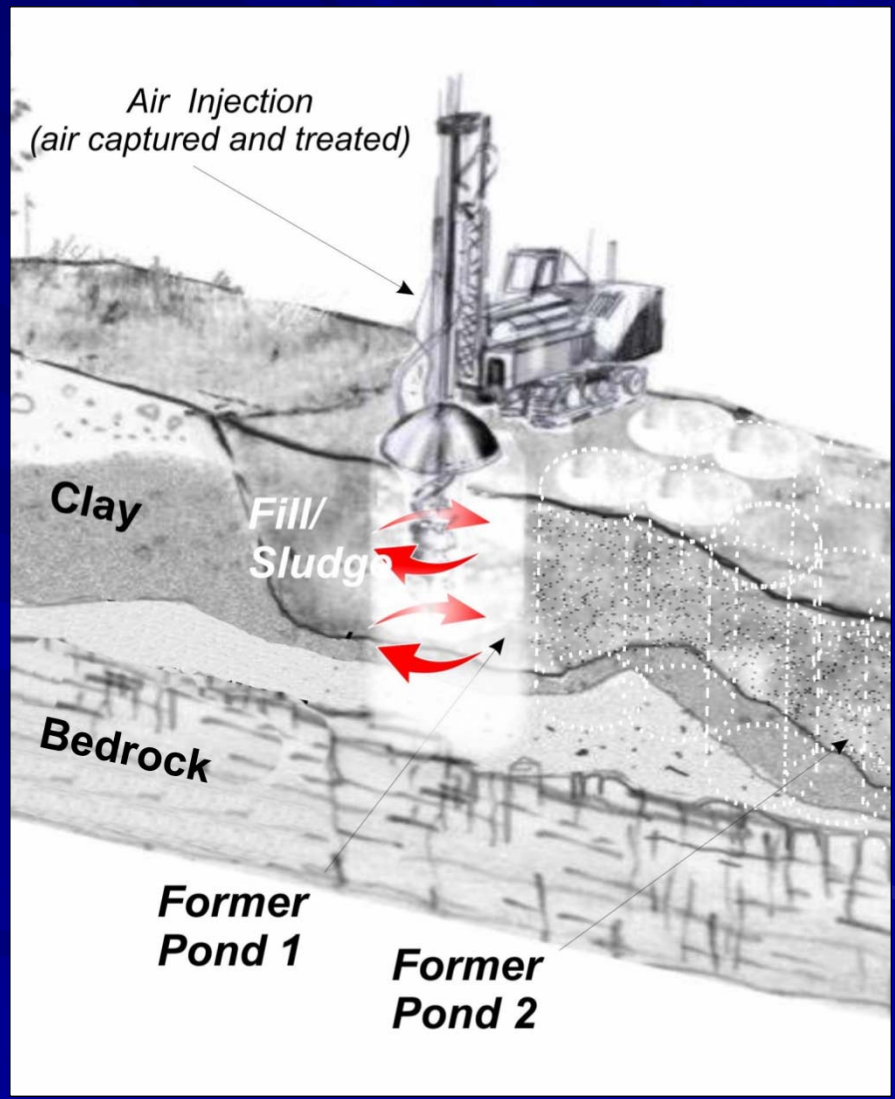
Remedy for Plant Soil and Groundwater

- Ponds 1 & 2 - treated in-place by air stripping and stabilization/solidification
- Other ponds and soil - covered by clean material
- Shallow groundwater - collected in a trench, pumped above ground, treated
- Deep groundwater - treated underground by nanoscale zero-valent iron



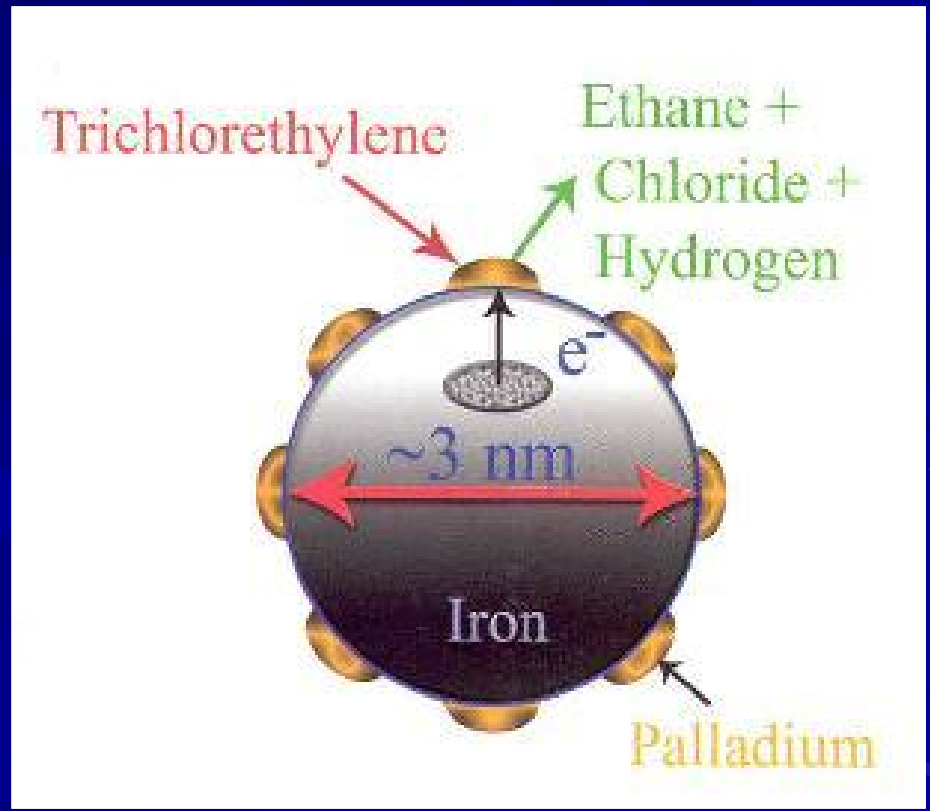
Stripping/Stabilization/Solidification

- Laboratory tests completed in 2007
  - Air stripping removed a large amount of contamination
  - Treatment with cement and fly ash immobilized the remaining contaminants



Nanoscale Zero-valent Iron (NZVI)

- Microscopic iron particles
  - Contaminants are destroyed by a reaction similar to rusting
- Field pilot tests completed in 2007
  - Good destruction of some contaminants
  - Biotreatment as an enhancement



Questions?